AMP Modular Interconnection System

Catalog 82066
Revised 11:95

Printed Circuit Board Modular Jacks

Through-Hole Side Entry with Center Latch Standard Height

Product Facts

- Meets or exceeds FCC Part 68 rules and regulations; REA PE-76; and UL 1863, Communication Circuit Accessories
- Meets 1000 volt dielectric requirement
- Designed for direct mounting on pc boards
- Designed for ease of soldering and board cleaning
- Selectively gold plated contacts for lower cost
- All jacks are UL 94V-0 flame retardant polyester, standard color black, unless specified otherwise
- Listed by Underwriters Laboratories Inc., File No. E81956
- Certified by Canadian Standards Association, File No. LR 7182

Specifications

Electrical:

Current Rating - 1.5 amp max. @ 25°C, derated to 0.2 amp max. @ 70°C ambient

Voltage Rating - 150 volts ac max.

Dielectric Withstanding Voltage - 1000 VAC, RMS, 60 Hz, 1 min.

Insulation Resistance - 500 megohms min.

Surge Test - to 1000 volts

Mechanical:

Pc Board Retention - will not dislodge from pc board when subjected to 1 lb [4.4N] pull before soldering and 10 lbs [44N] pull after soldering

Durability - 750 mating cycles

Material and Finish:

Housing - Polyester (wave solder compatible), UL 94V-0 rated

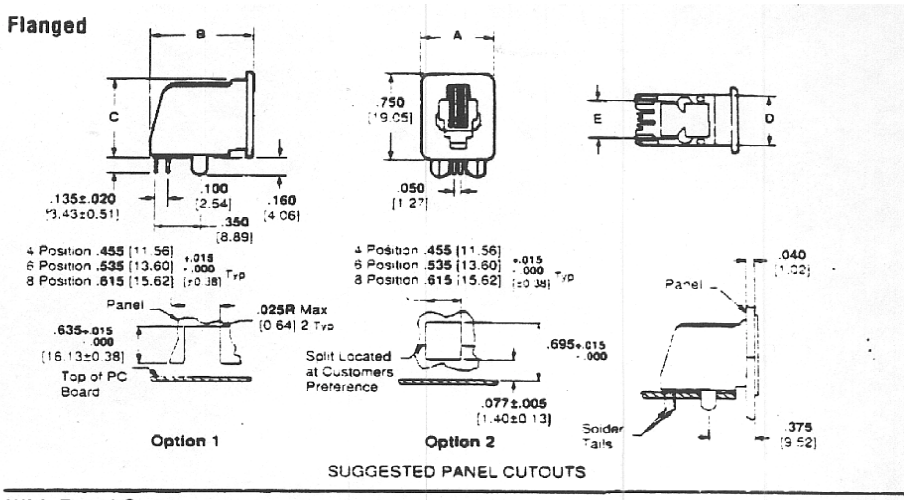
Contact - .014 [0.36] thk. phosphor bronze; plated .000050 [0.00127] gold in contact area and .000150 [0.00381] tin-lead on solder tails, over .000050 [0.00127] nickel underplate

Technical Documents

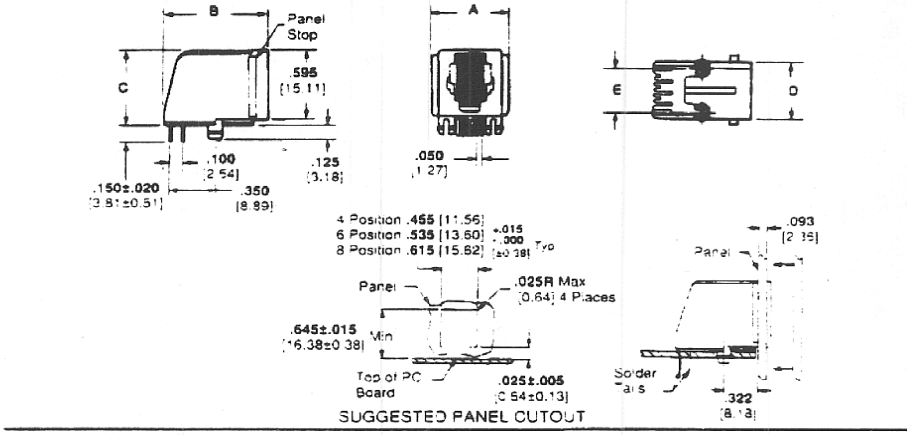
Application Specifications 114-02048

Application Specifications

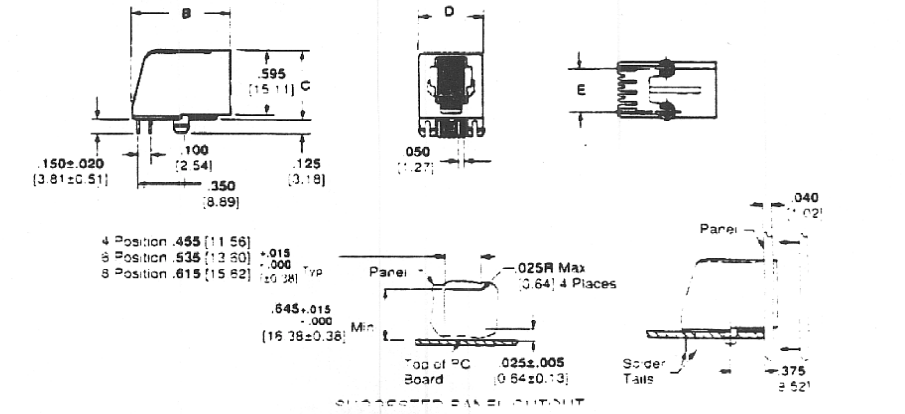
Flanged



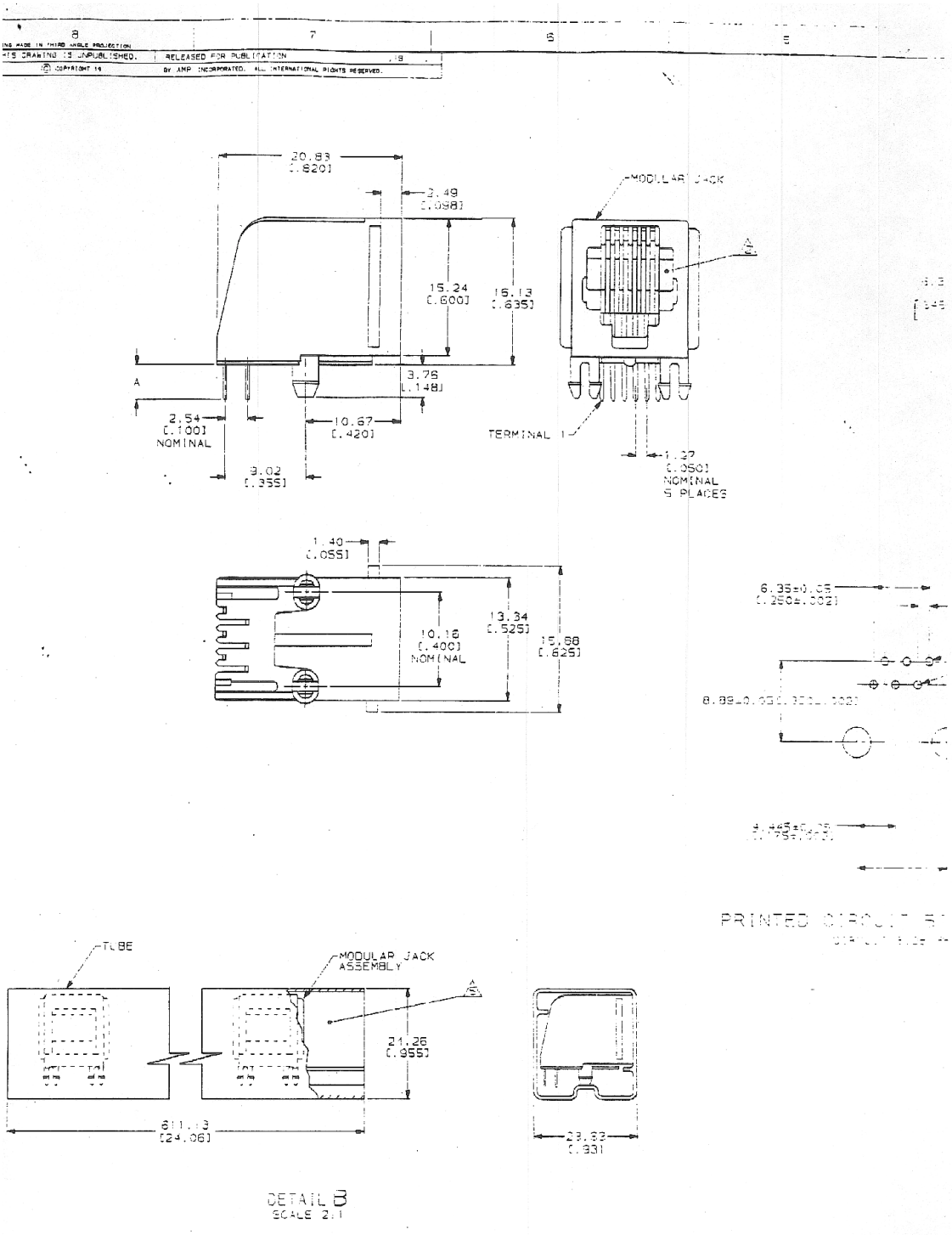
With Panel Stops



Without Panel Stops



Jameco Part number 151765



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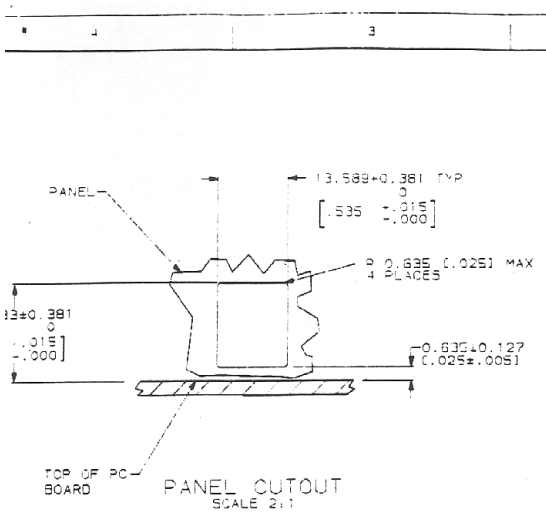
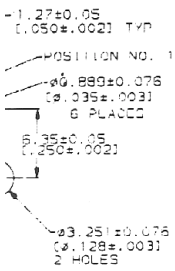




ARD LAYOUT
OWN

1. MATERIAL: HOUSING - PBT POLYESTER
TERMINAL - 0.64 [.0254] THICK PHOSPHORUS BRONZE PLATED WITH 1.27µm [.000050] THICK HARD GOLD IN LOCALIZED CONTACT AREA AND 2.03µm [.000080] THICK TIN-LEAD IN SOLDER AREA OVER 1.27µm [.000050] THICK NICKEL UNDERPLATE.

2. CAVITY CONFORMS TO FCC RULES AND REGULATIONS PART 68 AND FCA BULLETIN 345-81, PE-76 SPECIFICATION FOR MODULAR TELEPHONE HARDWARE.

3. DIMENSIONS ARE MAXIMUM UNLESS OTHERWISE SPECIFIED.

4. BULK PACKAGED IN A TRAY.

5. PACKAGED 36 ASSEMBLIES PER TUBE WITH BOTH ENDS CLOSED. SEE DETAIL B.

6. TERMINALS FOR 520250-1, -2, -4, -8, -9, -1/2 AND 1/1 LOCATED IN CENTER POSITIONS.

A	PACKAGED	COLOR	TERMINALS REQUIRED	PART NO
2.16-2.67 [.085-.105]	4	BLACK	4 5	1-520250-1
2.54-3.05 [.10-.12]	4	BLACK	4 5	1-520250-0
3.30-4.82 [.13-.17]	5	BLACK	4 6	520250-9
		PEBBLE GRAY	4 6	520250-8
		BLACK	6	520250-7
		PEBBLE GRAY	4 6	520250-6
	4	BLACK	6	520250-5
			4 6	520250-4
			2 6	520250-3

DO NOT SCALE PRINT.
UNLESS SPECIFIED
DIMENSIONS IN mm [INCHES]
TOLERANCES ON
2 PLC DEC ± .
3 PLC DEC ± .
ANGLES ± .
3
MATERIAL
1
FINISH

DR 4-2-94 T. WINTEN
CHK 4-5-94 D. WHITE
APPD 4-13-94 J. TINEY
APPD 4-13-94 H. McGRATH
PRODUCT SPEC 108-1160
APPLICATION SPEC

AMP
AMP Incorporated
Harrisburg, PA 17105-3608

NAME
MODULAR JACK ASSEMBLY, 6 POSITION, SIDE ENTRY, FLANGELESS, WITH PANEL STOPS

SIZE CAGE CODE DRAWING NO

AMP

Product Specification **108-1163** 03Sep96 Rev A

Modular Plugs, Thru-Hole & Surface Mount Jacks, Data & Telephone, PCB Mounted

1. SCOPE

1.1. Content

This specification covers the performance, tests and quality requirements for the AMP%r*%r Modular Telephone Plugs and Jacks designed for printed circuit board mounting.

1.2. Qualification

When tests are performed on the subject product line, procedures specified in AMP 109 series specifications shall be used. All inspections shall be performed using the applicable inspection plan and product drawing.

2. APPLICABLE DOCUMENTS

The following documents form a part of this specification to the extent specified herein. Unless otherwise specified, the latest edition of the document applies. In the event of conflict between the requirements of this specification and the product drawing, the product drawing shall take precedence. In the event of conflict between the requirements of this specification and the referenced documents, this specification shall take precedence.

2.1. AMP Specifications

A. 109-1: General Requirements for Test Specifications
B. 109 Series: Test Specifications as indicated in Figure 1. (Comply with MIL-STD-202, MIL-STD-1344 and EIA RS-364)
C. Corporate Bulletin 401-76: Cross-reference between AMP Test Specifications and Military or Commercial Documents
D. 114-2048: Application Specification
E. 114-6016: Application Specification
F. 114-6040: Application Specification
G. 114-6053: Application Specification
H. 501-91: Test Report

2.2. Commercial Specifications

A. FCC Rules for Registration of Telephone Equipment Part 68, Subpart F, Connectors
B. REA Bulletin 345-81, PE-76: Specification for Modular Telephone Set Hardware.
C. EIA/TIA 568-A: Commercial Building Telecommunications Cabling Standard

3. REQUIREMENTS

3.1. Design and Construction

Connectors shall be of the design, construction and physical dimensions specified on the applicable Product Drawing.

3.2. Materials

A. Contacts:
- (1) Plug: Phosphor bronze, nickel plated with selective gold plating on contact area and gold flash on remainder
- (2) Jack: Phosphor bronze, nickel plated with selective gold plating on contact area and tin-lead plating on solder area

B. Housings
- (1) Plug: Polycarbonate, UL 94V-2
- (2) Jack Thru-hole: Polyester, UL 94V-O
- (3) Jack Surface mount: Polyphenylene Sulfide UL 94V-0

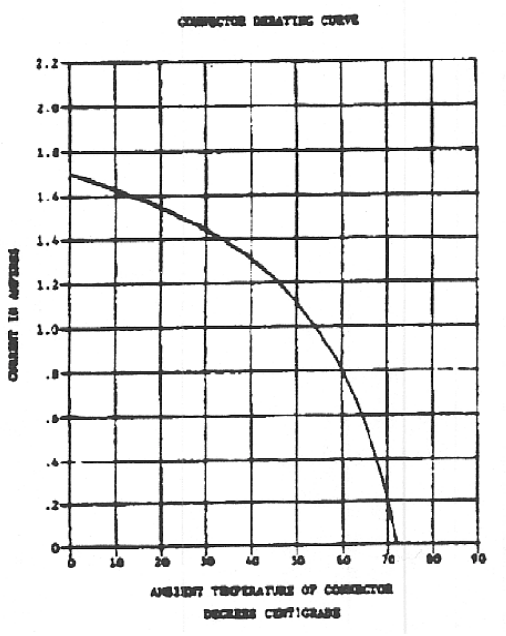
C. Shields: Brass, bright tin-lead plated

3.3. Ratings

A. Current: 1.5 amperes alternating current maximum at 25°C derated to 0.2 amperes maximum at 70°C ambient

B. Voltage: 150 vac maximum

C. Derating Curve:



D. Shielding Effectiveness: 20 dB minimum reduction from 30 to 400 MHz

3.4. Performance and Test Description

Connectors shall be designed to meet the electrical, mechanical and environmental performance requirements specified in Figure 1.

3.5. Test Requirements and Procedures Summary

Test Description	Requirement	Procedure
Examination of product.	Meets requirements of product drawing and AMP Spec. 114-6016. 114-2048. 114-6040, and 114-6053.	Visual, dimensional and functional per applicable inspection plan.
	ELECTRICAL	
Termination resistance, dry circuit.	R of 30 milliohms.	AMP Spec 109-6-1. Subject mated plug and jack to 50 mv open circuit at 100 ma maximum. See Figure 4.
Termination resistance, rated current.	R of 30 milliohms.	AMP Spec 109-25. Measure potential drop of mated plug and jack while carrying 1.5 amperes current. See Figure 4.
Insulation resistance.	500 megohms minimum.	AMP Spec 109-28-3. Test between adjacent contacts of the mated plug and jack.
Dielectric withstanding voltage.	1000 vac (rms) 60 Hz, 1 minute hold.	AMP Spec 109-29-1. Test between adjacent contacts of the mated plug and jack.
Temperature rise vs current.	30°C maximum temperature rise at 1.5 amperes.	AMP Spec 109-45-1. Subject mated plug and jack to temperature rise at rated current.
Current cycling.	No evidence of physical damage.	AMP Spec 109-51, Condition B. Method 2. Subject mated plug and jack to 500 cycles at 125% of rated current for 15 minutes ON and 15 minutes OFF
Shielding effectiveness, thru-hole jacks only	Frequency: 30 to 400 MHz. Reduction: 20 dB minimum.	AMP Spec 109-90 Measure radiated response from unshielded mated jack and plug terminated with unshielded cable while coductors are excited between 30 and 400 MHz. Repeat procedure using shielded jack mated with shielded plug terminated with aluminum/MYLAR shielded cable. The difference in response is shielding effectiveness in dB.
Crosstak (NEXT), high performance or Category 5 jacks and plugs only.	.40 dB @ 100 MHz. Next (f) $\geq$ 56-20 log (f/10) from 1 to 100 MHz.	EIA/TIA 568A, Annex B. Mate jack to test plug qualified by Paragraph B.5.2. Test plug should measure between -40.0 and -40.2 dB on pairs 45-36. Test in TOC configuration.

Test Description	Requirement	Procedure
Surge.	No evidence of physical damage.	Subject mated plug and jack adjacent contacts to 5 surges of each polarity at 1 minute intervals. Pulse to have 10/1000 microsecond shape and 1000 volt peak.
	MECHANICAL	
Vibration.	No discontinuities greater than 1 microsecond. Shall remain mated and snow no evidence of physical damage.	AMP Spec 109-21-1. Subject mated plug and jack mounted on printed circuit board to sinusoidal vibration for 15 minutes in each of 3 mutually perpendicular axis.
Durability.	No evidence of physical damage.	AMP Spec 109-27. Subject plug and jack to 750 mating and unmating cycles at the rate of 500 cycles per hour, latch inoperative;
Mating and unmating forces.	5 pounds maximum for unshielded plug and jack. 8 pounds maximum for shielded plug and jack.	AMP Spec 109-42, Condition A. Measure force required to mate plug and jack. Measure force required to unmate plug and jack with latch depressed.
Plug retention in jack.	Plug shall not dislodge from jack.	AMP Spec 109-50. Apply axial load of 20 pounds to plug housing at a rate of 0.5 inch per minute with plug mated in jack and latch engaged.
Pull.	Plug shall remain mated with no evidence of damage.	Load cable in mated plug with a 17 pound pull in axial direction, rotate plug housing 45° from cable axis, remove load. See Figure 5.
Jack retention to printed circuit board.	Jack shall not dislodge from printed circuit board. 1 pound minimum before flow soldering. 10 pounds minimum after flow soldering.	Apply perpendicular load at a rate of 2 inches per minute to the jack mounted on a 0.062 inch thick printed circuit board. See Figure 5.
	ENVIRONMENTAL	
Thermal shock.	No evidence of physical damage.	AMP Spec 109-22. Subject mated plug and jack to 25 cycles between -40 and 60°C.
High humidity-temperature cycling.	No evidence of physical damage.	AMP Spec 109-76-2. Subject mated plug and jack to 10 humidity-temperature cycles between 4 and 60°C at 95% RH.

Figure

3.6. Connector Tests and Sequences

Test or Examination	Test Group (a)									
	1	2	3	4	5	6	7	8	9	10
	Test Sequence (b)									
Examination of product	1	1	1	1	1	1	1	1	1	1
Termination resistance, dry circuit		2,4	2,4	4,6			2,6	2,4		
Termination resistance, rated current						2,5				
Insulation resistance	4		5				5			
Dielectric withstanding voltage	2						4			
Temperature rise vs current						3				
Current cycling						4				
Shielding effectiveness									2	
Crosstalk (NEXT)										2
Surge	3									
Vibration		3								
Durability				5						
Mating force				2						
Unmating force				3						
Plug retention in jack					2					
Pull								3		
Jack retention to PCB					3					
Thermal shock			3							
High humidity-temperature cycling							3			

NOTE *(a)* *See Para 4.1.A.*
(b) *Numbers indicate sequence in which tests are performed.*

Figure 2

4. QUALITY ASSURANCE PROVISIONS

4.1. Qualification Testing

A. Sample Selection

Modular plug and jack test samples shall be selected at random from current production lots. They shall be prepared for testing in accordance with current Application Specifications and Instruction Sheets.

Test Groups	Terminated Plugs	Jacks Mounted on PCB	Jacks not Mounted
1,2,3,4,7,8,9,10	10	10	10
5	10	10 Soldered 10 Not Soldered	10
6	5	5	

Figure 3
Test Samples Required Per Group

B. Test Sequence

Qualification testing shall be conducted as specified in Figure 2

4.2 Retention of Qualification

If, in a five-year period, no changes to the product or process occur, the product shall be subjected to groups 3, 6 and 7 of the testing described in the test sequence, see Figure 2. Justification for exceeding this time limit must be documented and approved by the division manager.

4.3. Requalification Testing

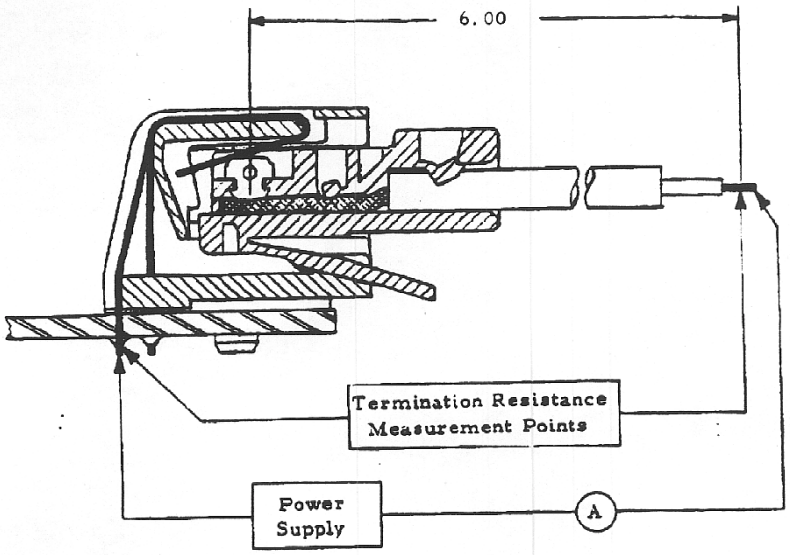
If changes significantly affecting form, fit, or function are made to the product or to the manufacturing process, product assurance shall coordinate requalification testing, consisting of all or part of the original testing sequence as determined by development/product, quality, and reliability engineering.

4.4. Acceptance

Acceptance is based on verification that the product meets the requirements of Figure 1. Failures attributed to equipment, test setup, or operator deficiencies shall not disqualify the product. When product failure occurs, corrective action shall be taken and samples resubmitted for qualification. Testing to confirm corrective action is required before resubmittal.

4.5. Quality Conformance Inspection

The applicable AMP quality inspection plan will specify the sampling acceptable quality level to be used. Dimensional and functional requirements shall be in accordance with the applicable product drawing and this specification.



NOTE *Millivolt drop (resistance) due to the 6 inch wire length shall be subtracted from all readings.*

Figure 4
Termination Resistance Measurement Points

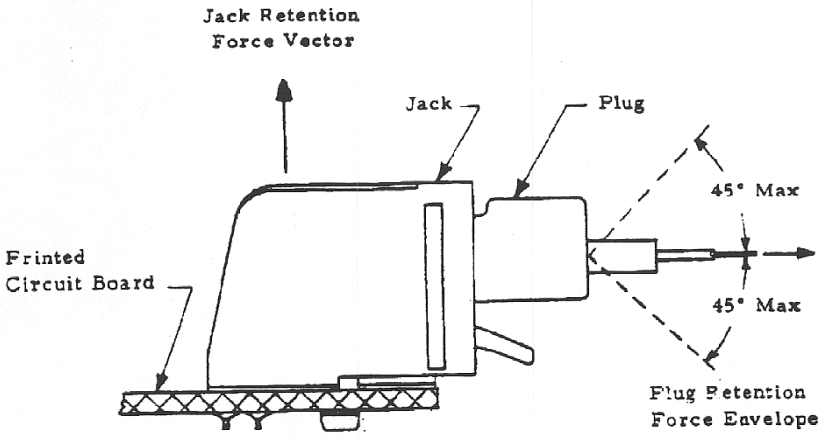


Figure 5
Plug and Jack Retention Forces